

### IN THE SPECIFICATION

Please amend the specification as follows:

The paragraph beginning at page 2, line 24 is amended as follows:

In addition to low series inductance  $L_{CPKG}$  in a capacitor, it's usually desirable to have a low effective series resistance ( $ESR_{CPKG}$ ), which goes hand-in-hand with a low dissipation factor. However, sometimes a very low  $ESR_{CPKG}$  can provoke unexpected problems in the form of resonance, especially when the value of  $ESR_{CPKG} ESR_{MB}$  is not matched to the sum of  $ESR_{CPKG}$  and  $R_{PLNS+SKT}$  and  $ESR_{MB}$ , and when  $(L_{PLNS+SKT} + L_{MB}) / (R_{PLNS+SKT} + ESR_{MB}) \gg C_{CPKG} * ESR_{CPKG}$ . When repetitive pulses excite the resonator formed by a low equivalent series resistance capacitor and the motherboard, high-amplitude ringing can result, producing an exceedingly noisy supply bus. The typical solution is to place electrolytic capacitors across the bus to damp the ringing, which is costly and uses a large amount of circuit board real estate. A better solution would be to somehow increase the series resistance of the bypass capacitor  $ESR_{CPKG}$ , without adding additional capacitance or inductance.

The paragraph beginning at page 3, line 6 is amended as follows:

Thus, there is a need in the art to provide additional series resistance for bypass capacitors, connected in parallel with the equivalent series resistance of the associated circuit board power supply decoupling capacitor. Adding this type of series resistance, possibly in the form of a separate resistive element, should be accomplished at low cost, without substantially increasing the inductive reactance of the equivalent circuit. The amount of series resistance added should also be selectable, in accordance with what is necessary to dampen the resonant frequency response of the equivalent circuit between the associated power supply and integrated circuit package. There is also a need in the art for a method to add series resistance to the equivalent circuit, as described above.

The paragraph beginning at page 4, line 20 is amended as follows:

~~Figures~~ Figure 2 is a schematic diagram of an equivalent circuit for a circuit board connected to a capacitor, including an added resistive element  $R_{PL}$ , according to the present invention. It should be noted that the resistive element  $R_{PL}$  has been added in series with the ~~decoupling~~ bypass capacitor 204 and the connecting circuitry 202. Therefore, the series combination of the resistive element  $R_{PL}$ , the package bypass capacitor 204 (which includes series elements of  $C_{CPKG}$ ,  $ESR_{CPKG}$ , and  $L_{CPKG}$ ) and the connecting circuitry 202 (which has a series elements of  $L_{PLNS+SKT}$  and  $R_{PLNS+SKT}$ ) is now connected in parallel with the associated motherboard capacitor 203 (which includes the series elements of  $C_{MB}$ ,  $ESR_{MB}$ , and  $L_{MB}$ ). Thus, in this case, the power supply PS transfers energy to the equivalent circuit which is the parallel combination of the motherboard capacitor 203 impedance and the series impedance of the connecting circuitry 202, the capacitor 204, and the resistive element  $R_{PL}$ . The energy is in turn transferred to the pair of power terminals 274, 276 of the integrated circuit package IC. The amount of resistance added due to  $R_{PL}$  can be adjusted to dampen ringing or other effects of resonance arising out of the prior art circuitry shown in Figure 1, without necessarily increasing the loop area of charge flow path, thus not introducing additional inductance.

The paragraph beginning at page 5, line 6 is amended as follows:

Thus, in one embodiment, the invention may be characterized as a resistive element  $R_{PL}$  and a bypass capacitor 204 in combination with a circuit board capacitor 203 to which is ~~mounted proximate to~~ an integrated circuit (IC). The magnitude or value of resistance for the resistive element  $R_{PL}$ , which is connected in series with the bypass capacitor 204 across the power terminals 274, 276 of the IC, ~~and the equivalent series resistance of the connecting circuitry (such as one or more circuit board planes or traces, or a circuit board power plane)~~  $R_{PLNS+SKT}[[.]]$  is selected so that when added to the effective series resistance  $ESR_{CPKG}$  of the bypass capacitor 204 and the equivalent series resistance of the connecting circuitry (such as one or more circuit board planes or traces, or a circuit board power plane)  $R_{PLNS+SKT}$ , the summed series resistance (i.e.,  $R_{PL} + ESR_{CPKG} \pm R_{PLNS+SKT}$ ) has a predetermined relationship to the

effective series resistance  $ESR_{MB}$  of the associated circuit board capacitor 203, ~~combined with (and connected to)  $R_{PLNS-SKT}$  (i.e.,  $ESR_{MB} + R_{PLNS-SKT}$ ).~~ Thus, the summed series resistance  $R_{PL} + ESR_{CPKG} + R_{PLNS-SKT}$  can be selected to be approximately equal to the effective series resistance of  $ESR_{MB} + R_{PLNS-SKT}$ .